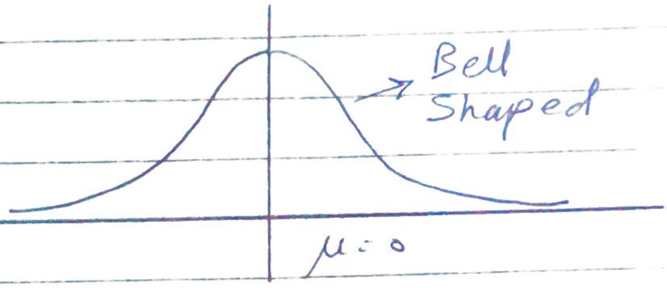
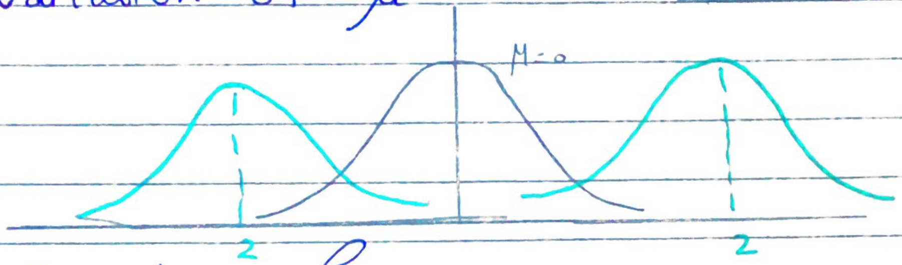
سكشن $\boxed{6}$ م. جمال الاثنين 14/12/2015

Normal Distribution (Gaussian distribution

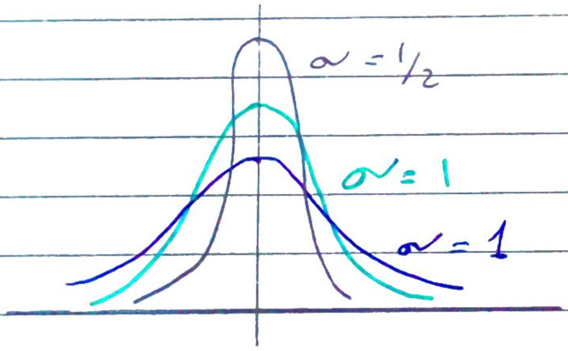
$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-1/2 \frac{(x-\mu)^2}{\sigma^2}}$$



Variation of μ



Variation of σ

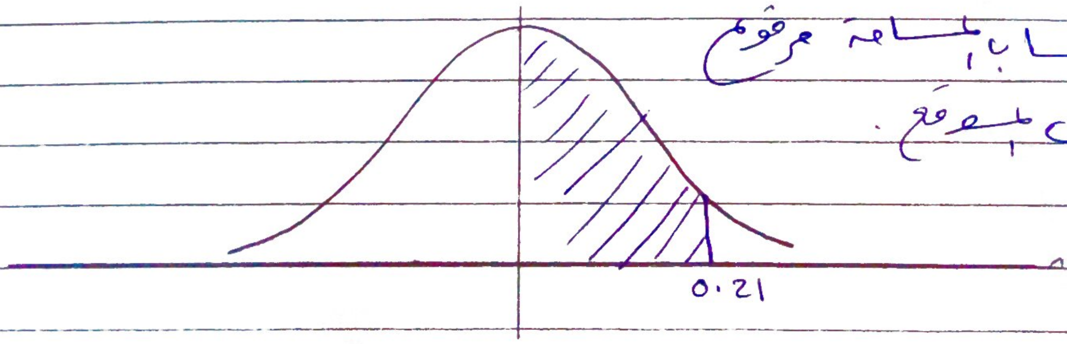


Note:-

* σ = 1 , μ = 0 ⟹ Standard Normal Distribution

$$f(x) = \frac{1}{\sqrt{2\pi}} e^{-1/2 \, x^2}$$

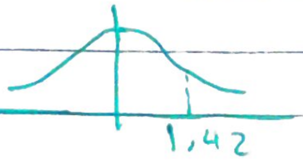
المساحة ثابتة، فيه جدول
كتاب المساحة مرفوع
على الموقع.



Sheet 6 :-

③ Let X be a random variable, with the standard normal distribution ϕ

i) $P(0 \leq X \leq 1.42)$

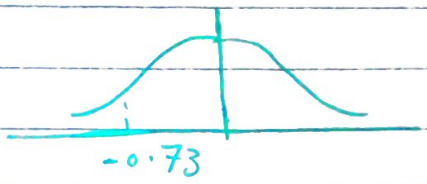


$= 0.4222$ القيم من الجدول

ii) $P(-0.73 \leq X \leq 0)$

$= P(0 \leq X \leq 0.73)$

$= 0.2673$

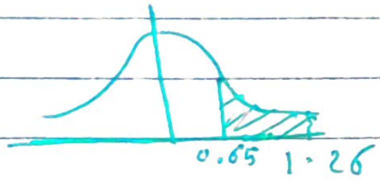


iii) $P(0.65 \leq X \leq 1.26)$

$= P(0 \leq X \leq 1.26)$

$\quad - P(0 \leq X \leq 0.65)$

$= 0.154$

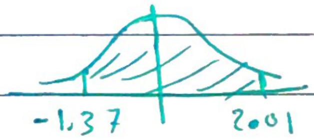


V) $P(-1.37 \leq X \leq 2.01)$

$= P(0 \leq X \leq 1.37)$

$\quad + P(0 \leq X \leq 2.0)$

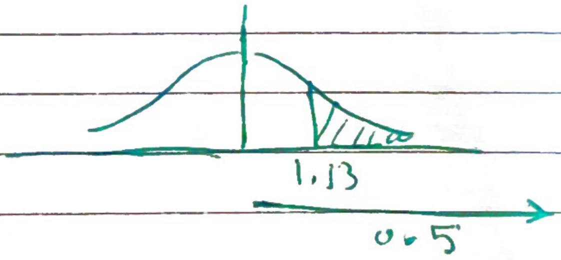
$= 0.8925$



- $P(X \geq 1.13)$

$= 0.5 - P(0 \leq X \leq 1.13)$

$= 0.1292$



- $P(|X| \leq 0.5)$

$\Downarrow$

$-0.5 \leq X \leq 0.5$

The values of μ, σ

$\mu = ✓, \sigma = ✓$

$\mu = 0, \sigma = 1$

Values
- Standard value (t) ← أصبح م (curve)
  $t = \frac{x - \mu}{\sigma}$
- Actual value (x)
  $x = \sigma t + \mu$

[5] Suppose the weight measurments w of 800 girls are normally distributed with mean 66 Kg and standard deviation 5 Kg. Find the number N of girls with weights

i) between 65 & 70 , ii) greater than or equal to 72

i) $t_1 = \frac{65-66}{5} = -0.2$

$t_2 = \frac{70-66}{5} = 0.8$

$\rightarrow P(65 \leq X \leq 70) = P(-0.2 \leq X \leq 0.8)$

$= 0.3674$

$N = 0.3674 \times 800 = 294$ girls

[1] The mean and S.D. on an examination are 74 and 12 respectively. Find the scores in standard units of students receiving marks

i) 65 ii) 74 iii) 86 iv) 92

i) $t = \frac{x-\mu}{\sigma} = \frac{65-74}{12} = -0.75$

$P(-0.75 \leq X \leq 0) = 0.2734$

مثل المسألة السابقة
لجميع النقاط.

$\boxed{2}$ Referring to preceding problem, find the marks corresponding to standard scores

i) -1 ii) 0.5 iii) 1.25 iv) 1.75

$$X = \sigma t + \mu$$
$$= 12(-1) + 79$$
$$= 62$$